keep the star bisected by the wire as long as they remain together in the field of view. The frictional bearing of the sphere upon the screw-head will prevent the clock from over-winding and injuring the thread of the micrometer-screw if it should be inadvertently left in gear with it until the screw reaches the end of its range.

The Astronomer Royal remarks on the foregoing :—

Capt. Herschel's abstract idea, that a wire should be made by mechanism to accompany the star-image, and at a definite point should make a galvanic contact, is excellent. It implies the necessity of placing the wire on the star beforehand, and of giving the wire frame a motion agreeing *very accurately* with the motion of the star-image. And here is the practical difficulty.

Professor Herschel's mechanical plan for doing this is ingenious. But it implies, 1st, an original uniform motion (not easy to get); 2nd, motion through three engrenages of bevelled wheels (which would have abundance of shakes); 3rd, adjustible motion by the surface of a sphere rubbing a drum-head at different declinations on the sphere. (I doubt whether this can be made nearly correct enough, but it is very pretty.)

I do not think that the problem is by any means solved.

Note on the Curve traversed by base-end (remotest from fixed pivot) of the last prism of a Single or Double Automatic Spectroscope. By Richard A. Proctor, B.A. (Cambridge).

Writing down somewhat in haste the equations in the Note on page 206, I failed to notice that the polar equations to the curves traversed by the points P and Q (fig. 2, p. 207) can be very readily obtained. Thus let

$$AP = r \quad \text{and} \quad \angle PAO = \theta.$$

Then θ is the component of $\angle$ D O A ; that is

$$\theta = \frac{\pi}{2} - 6 \sin^{-1}\left(\frac{a}{R}\right)$$

or

$$\sin\left(\frac{\pi}{12} - \frac{\theta}{6}\right) = \frac{a}{R} \qquad \text{(i)}$$

But

$$r = 2 R \cos\theta;$$

hence (i) becomes

$$r \sin\left(\frac{\pi}{12} - \frac{\theta}{6}\right) = 2 a \cos\theta.$$

This is the polar equation to the locus of P. It may be written

$$r\left[(\sqrt{3} - 1)\cos\frac{\theta}{6} - (\sqrt{3} + 1)\sin\frac{\theta}{6}\right] = 4\sqrt{2} \cdot \cos\theta.$$

C

The polar equation to the locus of Q is obviously

$$r \sin\left[\frac{\pi}{12} - \frac{1}{6}\left(\theta - \frac{\pi}{4}\right)\right] = 2\sqrt{2}\, a \cos\left(\theta - \frac{\pi}{4}\right);$$

or

$$r \sin\left(\frac{\pi}{8} - \frac{\theta}{6}\right) = 2\sqrt{2}\, a \cos\left(\theta - \frac{\pi}{4}\right).$$

It may be written

$$r\left[\sqrt{2-\sqrt{2}}\cos\frac{\theta}{6} - \sqrt{2+\sqrt{2}}\sin\frac{\theta}{6}\right] = 4\, a\,(\cos\theta - \sin\theta).$$

Occultation of 80 *Virginis by the Moon, observed at Forest Lodge, Maresfield, on May* 30, 1871. By Capt. Noble.

The star disappeared instantaneously at the Moon's dark limb

At $14^h\, 25^m\, 5^s$ L.S.T. = $9^h\, 53^m\, 13^s{\cdot}9$ L.M.T.

and reappeared at the bright limb (from behind a dome-shaped mountain)

At $15^h\, 14^m\, 48^s$ L.S.T. = $10^h\, 42^m\, 48^s{\cdot}8$ L.M.T.

These times are very good, although the atmosphere was unsteady. The power employed was 255, with my 4·2-inch Ross Equatoreal, and was adjusted on the star.

Observations of Winnecke's Comet. By the Rev. S. J. Perry.

Owing to the unusually bad weather in April and at the beginning of May, I was unable to observe this comet for a long time after its discovery. When the sky permitted of a first observation, the twilight and the nearness of the Sun rendered the object much less distinct than it had previously been, though it was still much more conspicuous than the comets of 1870.

The following positions may serve to complete the series of observations made by others more favoured by fair weather. The nearest Greenwich star ι *Aurigæ*, was chosen as the star of comparison, but an intermediate double-star was also made use of to diminish the chances of error.

	G.M.T.		R.A.	Decl.
	h m			
May 8	10 8	ι Aurigæ	4 48 34·2	+32 57 31·4
		Dist. of Comet	− 20 37	+ 2 5 30
		Comet	4 27 57·2	35 3 1·4